

Particles-to-fields in active matter

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日程 : **12 月 15 日 (月) 14:00 -**

場所 : **南 5 号館 5 階 503CD 室 大会議室**

概 要

Our lab uses quantitative microscopy and theory to develop constitutive and closure relations that bridge the particle-to-continuum field scales. In this seminar, I describe our application of feedback control on self-propelled agents to create spatiotemporal patterns and user-specified population distributions. We demonstrate the use of “gray-box models” that incorporate partially-known dynamics and learn the difficult-to-model terms (e.g., many-body interactions). We use the concepts of observability and time-delay embedding to model, forecast, and control the complex behaviors of active matter using continuum density data alone. By forcing the system to sample rare configurations, we can develop new constitutive field relations with appropriate closures. This project is aimed at deepening our understanding of mode coupling in nonlinear dynamics across the length and time scales.

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